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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/568,171

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Husam R. Arafat

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EXAMINER

KREINER, MICHAEL B

ART UNIT

PAPER NUMBER

3644

NOTIFICATION DATE

DELIVERY MODE

09/10/2010

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

JIM@WALTONPLLC.COM

Office Action Summary	Application No. 10/568,171	Applicant(s) ARAFAT ET AL.	
	Examiner Michael Kreiner	Art Unit 3644	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 August 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 and 21-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 and 21-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

Claims 23 and 24 objected to because of the following informalities: the claims appear to be identical in scope. Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-16 and 21-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 2,615,234 to Dumbleton in view of U.S. Patent No. 3,135,486 to Wing.

Regarding claim 1, Dumbleton teaches a leading edge member 6 for an aircraft, the aircraft having a substructure 18c, at least a portion of the substructure being attached to a partial airfoil skin 7, the partial airfoil skin being a first airfoil member of an airfoil, the leading edge member comprising: an exterior surface and an opposing interior surface forming a surface thickness therebetween (col. 3 *l.* 13-18, figs. 1-2); wherein at least one pocket is recessed into the interior surface of the leading edge member (col. 3 *l.* 66-73), each pocket being configured to deform in response to an impact from an object with the leading edge member, the at least one pocket being disposed solely within the leading edge member; wherein the leading edge member is configured for attachment to the substructure (fig. 2), such that the exterior surface of the leading edge member forms a second airfoil member of the airfoil; wherein the second airfoil member is fixed in relation to the first airfoil member (by rivets 44 in figs. 1 & 2). Dumbleton

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fails to teach that each pocket defining a region of the leading edge member has a pocket thickness that is less than the surface thickness of the leading edge member. Wing teaches a skin with pockets wherein each pocket defining a region of the leading edge member has a pocket thickness that is less than the surface thickness of the leading edge member (Wing col. 2 *l.* 55-56, fig. 8). It would have been obvious to one of ordinary skill in the art at the time of the invention to design the pockets of Dumbleton in the fashion taught by Wing to have a pocket thickness that is less than the thickness of the surface, in order to create a wing that is stronger and improves the safety characteristics of the aircraft.

Regarding claim 2, Dumbleton teaches that the leading edge member forms the leading edge of a wing member (col. 3 *l.* 66).

Regarding claims 3 and 4, Dumbleton teaches a leading edge member for a horizontal stabilizer 9. Dumbleton fails to teach a vertical fin. Dumbleton teaches that "my method and structure are readily adaptable to improved construction of any part of an airplane wing or fuselage" (col. 4 *l.* 51-53). It would have been obvious to one of ordinary skill in the art at the time of the invention to use the method of Dumbleton in view of Wing to design the leading edge of a vertical fin or horizontal stabilizer as discussed above in order to reduce the complexity of manufacturing the leading edge members (Dumbleton col. 4 *l.* 54-58).

Regarding claims 5 and 6, no weight is given to the process by which the pockets are formed, since the claim is drawn to an article and not a method. Furthermore, Wing teaches that the pockets are formed by a chemical etching process (col. 2 lines 56-7), and Dumbleton teaches that the pockets are formed by a mechanical milling process (col. 3 *l.* 23-30).

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Regarding claim 7, Dumbleton in view of Wing teaches the leading edge member according to claim 1, wherein the leading edge member is curved about a longitudinal axis so as to form an upper airfoil surface and a lower airfoil surface (fig. 1 of Dumbleton, fig. 1, col. 2 lines 48-50 of Wing).

Regarding claim 8, Dumbleton in view of Wing teaches the leading edge member according to claim 7, wherein the at least one pocket comprises: a plurality of pockets (Wing 23) arranged in a selected pattern over the interior surfaces of the upper airfoil surface and the lower airfoil surface (Wing fig. 3).

Regarding claim 9, Dumbleton in view of Wing teaches the leading edge member according to claim 8, wherein each pocket (Wing 23) is formed in one of the following geometric shapes: circle, oval, rectangle, square (Wing fig. 3).

Regarding claim 10, Dumbleton in view of Wing teaches the leading edge member according to claim 8, wherein the pattern of pockets on the interior surface of the upper airfoil surface is a mirror image of the pattern of pockets on the interior surface of the lower airfoil surface (Wing fig. 3).

Regarding claim 11, Dumbleton in view of Wing fails to teach different pocket sizes. It would have been obvious to one of ordinary skill in the art at the time of the invention to create different pocket patterns on opposing sides of the leading edge member. Airfoils typically have a concave under-camber, which greatly reduces the risk of bird collision, and thus reduces the need for reinforcement. The weight of the wing could be minimized by removing more material from the lower surface, resulting in a non-mirror image between the lower and upper surfaces.

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Regarding claim 12, Dumbleton teaches at least one rib member 20 connected to the interior surface of the leading edge member for attaching the leading edge member to the substructure (fig. 1).

Regarding claim 13, Dumbleton in view of Wing teaches a stiffening means (Dumbleton 45 or Wing 31 col. 3 *l.* 10-54) connected to the interior surface of the leading edge member for providing localized stiffness to the leading edge member.

Regarding claim 14, Dumbleton teaches that the stiffening means 45 is an elongated I-shaped beam (col. 4 *l.* 1-2).

Regarding claim 15, Dumbleton fails to teach stiffening means not connected to the substructure (Dumbleton spar 18c, col. 3 *l.* 73). Wing teaches stiffening means 31 wherein the stiffening means is not connected to the substructure (in Wing, the substructure is spar 40, which is analogous to the spar 18c of Dumbleton as modified). It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the wing structure of Dumbleton as modified with stiffening means not connected to the substructure as taught by Wing, to create a stiffer wing with openings in the space between the additional stiffeners and spars to allow for wiring, actuators, fluid lines, etc. to be routed through the wing (Wing col. 3 *l.* 10-54).

Regarding claim 16, Dumbleton teaches that the stiffening means 45 is also connected to the substructure 18c (col. 4 *l.* 1-2).

Regarding claims 21 and 22, Dumbleton teaches that the leading edge member is attached to the substructure using at least one fastener 44 (fig. 2). The leading edge member is configured for detachment from the substructure by removing the at least one fastener (fig. 2).

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Regarding claim 23 and 24, Dumbleton teaches that the second member of the airfoil is upstream from the first member of the airfoil (fig. 1), where the partial airfoil skin is the first airfoil member.

Response to Arguments

Applicant's arguments with respect to claims 1-16 and 21-24 have been considered but are moot in view of the new ground(s) of rejection necessitated by amendment.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. U.S. Patent Application Pub. No. 2002/0011540 to De Castro Nodal *et al.* and U.S. Patent No. 1,988,085 to Orlando teach removable leading edge members fixed to a partial airfoil skin. U.S. Patent No. 4,113,549 to Brimm and *Isogrid Design Handbook* describe in detail the well-known process of creating higher strength-to-weight ratio skin members for aerospace structures where the skin members have pockets formed therein.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Kreiner whose telephone number is (571)270-5379. The examiner can normally be reached on Monday-Friday 9am-5:00pm (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Collins can be reached on (571)272-6886. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/M. K./

Examiner, Art Unit 3644

/Tien Dinh/

Primary Examiner, Art Unit 3644